14). Hausman's finding implies that cellular systems were charging prices substantially below the monopoly level. This can be demonstrated as follows: If they had charged higher prices, given an elasticity of demand of less than one they would have increased their revenues (see ¶74). They would also have sold less output, and this would have enabled them to reduce their costs. Thus, a higher price would have increased profits both by increasing revenues and reducing costs. From this Hausman infers that *cellular suppliers were not colluding to raise prices to the monopoly level.*

78. It should be clear from this discussion that one cannot reach a conclusion that regulation is necessary from evidence regarding a low elasticity of demand for cellular services or, in less technical terms, alleged evidence that cellular services may be "essential" to consumers (NYPSC Petition at 4, 12).

4. Innovation

79. In addition to declining real prices, cellular systems appear to have been performing well in other dimensions. There has been substantial technological change, permitting better service (for example, reduced interference and fewer blocked and dropped calls), new services (for example, information services, voice mail, personalized traffic routing, and data services such as remote monitoring), and higher capacity and lower costs (for example, digital conversion). There have been many innovations in pricing and other aspects of plans used to market services (for example, pricing plans aimed at high and low use customers and occasional callers, discounts for usage outside the central business district, and equipment discounts and free air time for new customers).

5. Rates of Return

80. As evidence that cellular systems have been exercising market power, it has been argued that they enjoy high accounting rates of return. This line of argument is fatally flawed. First, some systems have low rates of return. Second, incorrect measures of capital are used to compute the rates of return, so the rates are not appropriate for economic analysis.

One should use replacement costs rather than book values, and one should include intangible assets. Also, as in many other industries, new entrants into cellular service operate at a loss initially (Public Utilities Commission, State of Hawaii, "Petition," *In the Petition of Public Utilities Commission, State of Hawaii, For Authority to Extend Its Rate Regulation of Commercial Mobile Radio Services in the State of Hawaii*, FCC PR File No. 94-SP1, Aug. 8, 1994 (HPUC Petition), at 4). It is reported that "The Santa Barbara market apparently took years to mature and produced gradually higher returns as the market matured and more customers were added to the system" (CPUC Petition at 48). Similarly, a study reportedly found that in the early years of operations, cellular carriers tended to lose money (CPUC, Division of Ratepayer Advocates, *Phase II Comments on Regulation of Cellular Radiotelephone Utilities*, 1989, reported in GAO at 26). These start-up losses should be capitalized and included in a firm's rate base. Accounting rates of return also ignore the fact that spectrum is a scarce asset that belongs in the rate base, as I have explained above. The CPUC has pointed out that:

> Accounting rates of return for wholesale carriers do not in themselves reveal whether profits are due to scarcity of available radio spectrum, uncompetitive pricing, or the ordinary returns on investment that may be earned due to the riskiness of the cellular industry. (CPUC, Decision 90-06-025, *Investigation on the Commission's Own Motion into the Regulation of Cellular Radiotelephone Utilities*, 1990, at 93, cited by GAO at 28.)

81. It has been argued that average rates of return on equity for cellular systems are unduly high compared to regulated returns for traditional landline companies and unregulated returns for high tech companies (NYPSC Petition at 8-9). In the NYPSC analysis, it is not clear how the rates of return on equity were computed or whether they were computed in a consistent manner, for example, as profits divided by the book value of equity, or as profits divided by the stock market value of common shares. Whichever way they are computed, simple comparisons of the rates of return on equity do not shed light on whether companies are exercising market power. First, even if income and capital were properly

measured, nothing relevant could be inferred from a high ratio of income to capital unless an industry is in long-run equilibrium, and it is safe to say that the cellular industry is not in long-run equilibrium. Second, even in long-run equilibrium, the ratio of profits to equity capital will depend considerably on risk, which varies among industries and depends on such things as the debt-equity ratio. Third, even in long-run equilibrium, what one expects to be equalized, other things equal, are *expected* rates of return, not the particular rates of return actually earned in any particularly year or set of years. In any case, one certainly would not expect that rates of return to book value of equity would tend toward equality. Book value of equity is a residual accounting variable that depends heavily on all manner of historical events that are irrelevant to economic profits and market power, for example, changes in prices since the company acquired its assets, accounting rules regarding the number of years over which to depreciate capital assets, and whether the company obtained licenses free or purchased them in the market. It should be observed that some companies in industries such as cellular communications, cable television, and real estate have a *negative* book value of equity because the book value of capital, based on historic acquisition prices and accounting depreciation rules, is less than the debt of the company (for examples, see HPUC Petition, Ex. A-1 to A-8).

6. q-ratios

82. The National Cellular Resellers Association (NCRA) argues that the cellular phone industry's supposedly high value of q, the ratio of market value to replacement costs, indicates market power (Letter from David Gusky, Executive Director, NCRA, FCC GN Docket No. 93-252, Jan. 21, 1994, relying on studies by Thomas W. Hazlett, "Market Power in the Cellular Telephone Duopoly," Aug. 1993, at 12-16, and "Errors in the Haring & Jackson Analysis of Cellular Rents," Jan. 1994, at 16-28.) The estimates of q proposed do not provide reliable evidence of market power, however, because they suffer from both data and conceptual problems. (The data, which are for 1990, are from NTIA, "US. Spectrum Management Policy: Agenda for the Future," Feb. 1991, App. D.)

83. First, these estimates of q are based on data for only a small part of the industry and for only one year, while q can vary greatly. Thus, they may not be a reliable guide to the value of q for the industry as a whole. The estimate of the replacement costs of the non-depreciated tangible assets in the denominator in the ratio is based on data from only four firms. The estimates of market value are based on acquisition prices of cellular licenses, which are available for only 24 of the several hundred cellular licenses in this country.

84. Because q is sensitive to general economic conditions, it can fluctuate widely over time. An example of the intertemporal variability of q is given by Summers, who found that in the two days from October 19 to October 21, 1987, the value of q for U.S. non-financial corporations rose by more than 10 percent (L. Summers, "Stock Prices, Inflation and q," Harvard University, updated October 1987). Intertemporal variability of q is a particularly serious problem for the NCRA and CPUC because they estimate q for cellular companies for only one year, 1990. The CPUC compares its estimates of q for the cellular industry to estimates for other industries for 1961 to 1985 (CPUC Petition at 63). Comparing estimates of q derived for different time periods does not help determine whether cellular carriers exercise market power.

85. Furthermore, q ratios should not be computed using only the cost of tangible assets as the denominator. Startup losses and intangible assets, such as customer goodwill, technical expertise, and a skilled management team, should be included. As a result of these errors in measuring replacement costs, the estimated values of q are biased upwards.

86. Moreover, even under competitive conditions the market value of cellular companies will reflect the scarcity value of spectrum that the Commission has allocated to cellular. The right to use this scarce spectrum is an important asset that is acquired in the purchase of a cellular company. Thus, like the estimates of rates of return discussed above, the estimates of q are biased upward because the scarcity value of spectrum is omitted from the measure of replacement capital costs.

87. It has been argued that in a competitive market the q ratio is equal to or near one. That is true only if q is accurately measured and if the market is in long run equilibrium. In a competitive industry, a firm's high profits are often an inducement to further investment, so a high q could indicate a need for additional investment to satisfy consumer demand (Ronald E. Shrieves, "The Use of Tobin's q," University of Tennessee, 1987). As investment in the industry grows, profit rates and q-ratios will fall, but investment is not instantaneous, and that process may take years. The role of high q-ratios as a signal of a need for additional investment in an industry explains why faster-growing industries tend to have higher values of q (Mark Hirschey, "Market Structure and Market Value," *Journal of Business,* Jan. 1985, 89-98; M.A. Salinger, "Tobin's q, Unionization, and the Concentration-Profits Relationship," *Rand Journal of Economics*, Summer 1984, 159-70).

88. The cellular market is not in long-run equilibrium. In fact, it is one of the fastest growing industries in the country with a rapid increase in subscribers, steadily improving technology, and the continued development of new sources of competition. Thus, a high value of q for the cellular industry would be neither surprising nor troublesome.

I. *Conclusions on Market Structure and Performance*

89. Based on my review of the evidence, it is my opinion that neither cellular systems nor other CMRS providers control essential facilities. Little of the alleged evidence of anticompetitive behavior survives careful economic analysis. Regardless of their concentration levels, there is no sound basis for a conclusion that cellular systems have been exercising significant market power. There is evidence of competition, and concentration will fall substantially over the next several years. Consequently, there is no empirical basis for believing that there is a problem with market performance that would warrant regulating CMRS pricing, CMRS interconnection decisions, or the relationships between facilities-based CMRS providers and resellers. Thus, unless there is some special benefit from interconnection requirements (which I believe there is not—

see below), the Commission should extend its historical forbearance from economic regulation of this industry to include interconnection regulation.

IV. Policy Purposes of CMRS-to-CMRS Interconnection Requirements

90. Section IV of my declaration explains why CMRS-to-CMRS and CMRS-to-PMRS interconnection obligations would not have significant benefits. Section V explains why requirements that CMRS providers make switch-based interconnections with resellers or unbundle services provided to resellers would not have significant benefits. Section VI explains that such regulations would have substantial costs. The imposition of interconnection requirements on CMRS providers therefore fails a benefit-cost analysis and would make consumers worse off.

91. As I explained in ¶4 and ¶¶16-17, the essential facilities argument is not relevant to the issue of imposing interconnection requirements on CMRS providers. Furthermore, even collectively, incumbent CMRS providers do not control facilities that are essential to new CMRS competitors.

92. Nevertheless, suppose for the sake of argument that a set of CMRS providers did, collectively, control facilities that constitute a bottleneck or a relevant upstream market. In this case, it would still be necessary for the set of CMRS providers to collude in order to deny access to new entrants or other competitors in downstream markets. Such a collusive arrangement is unlikely. First, it would be relatively easy for antitrust authorities to detect. Second, as I have discussed in Section III, there is no persuasive evidence that CMRS providers have been colluding on matters such as pricing or interconnection. Third, the number of firms that can offer alternatives to the facilities of any given CMRS provider, and thus the number of firms that would have to be part of a collusive arrangement, is increasing.

93. There is, therefore, no empirical basis for concluding that CMRS providers will not supply interconnection services to other CMRS

providers and to PMRS licensees when it is efficient from society's point of view for them to do so. As long as it is efficient to provide interconnection services, it is possible to reach an agreement for interconnection services that makes both parties better off. In deciding whether to interconnect, CMRS providers can be expected to compare the charges they pay for use of the LEC switch and LEC trunks with the cost of installing and operating an interconnection, including the cost of direct trunks. Other factors that a CMRS provider would take into account are any adverse effect of an interconnection on the quality of its service, and the value of the route redundancy provided by adding a direct interconnection. If a direct interconnection reduced costs and therefore prices, both companies would gain not only from the cost reduction itself but from increased demand for their services. If one carrier failed to interconnect with another when it was efficient to do so, other carriers would gain competitive advantages from doing so. There is, therefore, no reason to expect that CMRS providers will fail to agree to efficient interconnections.

94. Since CMRS providers can be expected to supply interconnection services voluntarily when it is efficient for them to do so, the imposition of interconnection requirements on them by the Commission is unlikely to have any significant benefits. When there is competition, a refusal to interconnect can only mean that the costs of interconnection exceed the competitive benefits, perhaps because of the capital costs of setting up the interconnection or because interconnection would make it difficult or impossible for a carrier to adopt some new technology or marketing plan. In a competitive environment a unilateral refusal to interconnect is simply an exercise in business tactics, and unlikely to have adverse consequences for the process of competition.

95. Decisions by communications carriers not to interconnect are analogous to "unilateral refusals to deal" in antitrust. Refusals to deal have been subjected to extensive analysis by courts and commentators. The consensus today is that unilateral refusals to deal (refusals to interconnect, for example) are generally benign, especially in cases where the firm refusing to deal lacks market power. Even if the firm enjoys market

power, a rule of reason analysis is required to weigh the costs and benefits of interconnection requirements (Scherer and Ross at 558-62; Carlton and Perloff at 524-539; Areeda and Hovenkamp at 765-68).

96. It is entirely possible, however, that a significant increase in interconnections among CMRS providers at this stage of the industry's development would be inefficient. After all, most traffic today and for some time to come will be landline-to-mobile or the reverse, rather than mobile-to-mobile. Interconnection through the LEC may minimize costs for the system as a whole if the costs of direct CMRS-to-CMRS interconnections are significant, particularly in situations where the volume of CMRS-to-CMRS traffic is limited.

97. Suppose, nonetheless, for the sake of argument that CMRS providers would sometimes deny efficient interconnection services. To the extent that interconnection is desired by a CMRS provider in order to bypass the local exchange carrier for calls to and from subscribers to another CMRS system, a denial of interconnection would be unlikely to cause a significant increase in the costs for any CMRS system. One reason for this is that only a small share of calls originating from subscribers of CMRS services go to subscribers of other CMRS services.

98. There is no evidence that denial of interconnection is a substantial issue, particularly in the case of interconnection between CMRS providers and interconnection between CMRS and PMRS providers. The Commission reports that "the relatively few complaints the Commission has received concerning cellular carriers' denial of interconnection have involved allegations that cellular carriers refused to allow resellers to interconnect their own facilities with those of cellular carriers under reasonable or non-discriminatory terms and conditions" (*Second Report* at ¶237). Interconnection with resellers is addressed in Section V.

99. It might be argued that the Commission should conclude that an interconnection requirement would encourage adoption of uniform standards and interoperability, and that this is a worthwhile policy goal. But

even if the conditions were present for a market failure with respect to standards under decentralized decision making, there simply is no reason to believe that government intervention would improve the situation. Further, misguided government intervention has the force of law, whereas incorrect market decisions that turn out to allocate resources in a non-optimal way may be overcome because of the potential for private gain from allocating resources more efficiently.

V. Policy Purposes of Mandating Switch-Based Interconnection with Resellers and Unbundling

100. As I explained in ¶4, ¶16, and ¶18, the essential facilities argument is not relevant to new requirements for switch-based interconnections with resellers or requirements for unbundling. Cellular carriers are already required to offer nonswitched interconnection to resellers.

101. Aside from the essential facilities argument, some parties have expressed concerns that cellular carriers have an incentive to limit the ability of resellers to compete in retail sales. However, there is no persuasive evidence that exercise of market power by cellular carriers is a significant problem. Without such evidence, unless their incentives are distorted by government regulations, each cellular system has a powerful incentive to have its retail marketing done in the least-cost manner—whether this involves independent resellers or vertical integration or both. Minimization of costs contributes to profits both directly and by enabling the firm to reduce prices and increase sales. Under these circumstances, there is no reason to expect that decisions by CMRS providers relating to independent resellers will have an adverse effect on competition or consumer welfare.

102. It has been suggested that an alleged declining share of resellers in retail sales, in at least some areas, indicates that competition has been declining (CPUC Petition at 29-30). However, the share of resellers has no particular implications for wholesale competition or for consumer welfare. It is the degree of competition among wholesalers that is relevant to evaluation of interconnection regulations. A McDonalds franchisee does

not compete with McDonalds the franchiser, and the market share of independently owned McDonalds outlets, vis-à-vis company-owned stores, sheds no light whatever on the degree of competition faced by McDonalds at the wholesale level. Furthermore, the market share of independent resellers has no direct implications for consumer well-being. In some markets suppliers are vertically-integrated into retailing, in some they use dual distribution systems and sell to consumers both directly and through independent resellers, in others they sell only through resellers, and in some markets some suppliers use one of these organizational forms and others use another. All these options are compatible with competition.

103. When a wholesale supplier, such as a facilities-based cellular provider, uses a dual distribution system in which it offers service both through company-owned retail outlets and through independent resellers, complaints by the independent resellers are common. Their existence is not evidence of anticompetitive behavior, as much antitrust law and commentary makes clear (Areeda and Hovenkamp at 808-14; Owen and Braeutigam, chap. 1). Unbundling may be denied because it would be inefficient, and a complaint may be nothing more than an effort to obtain service at an artificially low price.

VI. Costs of Regulating Interconnection and Unbundling

104. The imposition of interconnection requirements on CMRS providers by the Commission would have no benefits. It would, however, be likely to result in substantial costs. First, it would lead to the provision of interconnection services in situations in which the value of the interconnection was less than the cost. CMRS providers, resellers, and PMRS licensees would be likely to request inefficient interconnections because of pricing distortions, that is, because they would be able to obtain services at artificially low prices that do not fully reflect their costs. Regulation is too imperfect to discriminate accurately between situations in which interconnection is efficient and other situations in which it is inefficient. Both to avoid lengthy proceedings and as a result of such proceed-

ings, CMRS providers would be induced to provide interconnections that are not worthwhile.

105. Interconnection requirements, like many other types of regulation, would also impede technological progress and innovation. Interconnection requirements by their nature constrain the technology and marketing choices available to suppliers. The possible adverse effects of interconnection requirements on technological innovation can be illustrated in two ways. First, consider the impact of a hypothetical new switching technology for mobile communications that, if adopted, would lower switching costs by 50 percent. Further assume that customer equipment is transparent to the new technology, but that interconnecting carriers' switches are not. Any given carrier cannot adopt the new technology unless all interconnecting carriers do so. In these circumstances, a carrier would have to balance the gains from investing in the new technology (lower costs, lower prices, higher market share) against the costs (lost traffic from interconnecting carriers, increased costs from alternative interconnect paths, such as a LEC switch). Given competitive conditions, there is no reason to suppose that this decision will not be made in a way that best serves the interests of customers. But an interconnection requirement would either make the new technology unusable until all carriers were prepared to adopt it, or at least reduce the cost savings by requiring the innovating carrier to maintain two regimes.

106. Second, consider an analogy from the early history of the automobile industry. As that industry developed, engineers and designers had to make a series of decisions about standards for tires, fuel, and other items provided by third parties to consumers who purchased automobiles. Each automobile company had the same range of incentives and trade-offs described above with respect to the adoption of new technologies and product designs. Sometimes, adoption of a new technology, such as engine improvements, made new automobiles incompatible with old accessory products, such as motor oils. A government requirement that each manufacturer had to maintain interconnectability with all of its various suppliers or competitors would clearly have frustrated the development of

the automobile, perhaps freezing technology for many years. The absence of government interconnection standards does not seem to have hindered the development of both engines and motor oils. While it is easy to see why some firms might benefit from such government intervention, it is very hard to see how consumers could benefit.

107. Even without explicit regulation of prices for interconnection services, imposition of an interconnection obligation inevitably brings with it implicit regulation of prices. Presumably, prices will have to be "reasonable" and "non-discriminatory." It follows that imposition of interconnection obligations would suffer from many of the problems of price regulation. Similarly, unbundling requirements will involve regulation of prices of affected services. Price regulation limits the ability of regulated firms to respond to changes in technology, cost and demand conditions, and deters new investments, quality improvements, introduction of new services, and entry by reducing returns on pro-competitive activities. The distorting effects of price regulations that limit returns on investments are likely to be greatest in industries such as CMRS that are characterized by rapid growth, technological change, and relatively high risk. Imagine that the prices of automobiles had been regulated during the early days of the Ford "monopoly." It is unlikely that investment by others in new technologies and products would have taken the same path that it did.

108. In industry after industry, regulation has restricted the introduction of new products and new sources of competition. For example, Commission regulations in the late 1960s and early 1970s delayed the growth of cable television (Owen and Wildman at 215). Other industries in which regulation was used to prevent or restrict competition include international telecommunications, title insurance, surface freight transportation, and airlines (Owen and Braeutigam; Sam Peltzman, "The Economic Theory of Regulation after a Decade of Deregulation," *Brookings Papers on Economic Activity: Microeconomics,* 1989, 1-41).

109. Mandatory access requirements may create free rider problems that dampen the incentives of CMRS providers to make improvements in their networks, particularly where access is provided to a firm that is also a competitor. Returning to the example of the Ford "monopoly," it is unlikely that the world would have been a better place if Ford had been required to "unbundle" so that Nash, for example, could sell Ford chassis with Nash bodies, or had been required to allow Nash to use its assembly lines, intellectual property, distribution facilities, and other assets.

110. It is also important to remember that government regulations involve substantial administrative costs both for the industries being regulated and for the government.

VII. Conclusion

111. For the reasons given above, I have concluded that decisions on interconnection and bundling are best left to the market rather than being subjected to regulation. There is no persuasive evidence that obligations to provide interconnections, other than those that result from market forces, would have significant benefits, but such obligations are likely to have substantial costs. Interconnection obligations, as well as other types of regulation such as mandatory unbundling of services sold to CMRS resellers, would therefore be likely to harm consumers. Neither cellular systems nor other CMRS providers control essential facilities. Regardless of concentration levels, there is no sound basis for a conclusion that CMRS providers have been exercising significant market power. There is evidence of sufficient competition, and concentration will fall substantially over the next several years. Consequently, there is no empirical basis for believing that there is a problem with market performance that would warrant regulating CMRS interconnection decisions or the relationships between facilities-based CMRS providers and resellers. Overall, I conclude that conditions warrant continued forbearance from regulation.

I declare under penalty of perjury that the foregoing is true and correct.

Bruce M. Owen

September 12, 1994

CURRICULUM VITÆ

Bruce M. Owen

OFFICE ADDRESS	Economists Incorporated 1233 20th Street, N.W., Suite 600, Washington, D.C. 20036 202 833-5224
BACKGROUND	Born 1943, Worcester, Massachusetts • Attended public schools in Millbury, Massachusetts. • Married 1965 to the former Josetta Knopf • Two children: Peter 1969 and Bradford 1974.
EDUCATION	B.A. Williams College, 1965. Ph.D. Stanford University, 1970.
PRESENT POSITION	President, Economists Incorporated 1981- • Visiting Professor of Economics, Stanford University (Stanford in Washington) 1989-.
PREVIOUS EXPERIENCE	Antitrust Division, United States Department of Justice: Chief Economist, 1979-1981 • Duke University: Associate Professor of Business and Law 1978-1980, Adjunct Professor of Public Policy 1981-88 • Stanford University: Assistant Professor of Economics, 1973-1978 • White House Office of Telecommunications Policy: Chief Economist, 1971-1972.
CURRENT MEMBERSHIPS AND AFFILIATIONS	Member, American Economic Association • Member, Econometric Society • Member, Advisory Panel, ABA Antitrust Section Economics Committee • Member, American Law and Economics Association • Principal, Council for Excellence in Government • Member, National Economists Club.

FELLOWSHIPS

Merit Scholar 1961-65 • Woodrow Wilson Fellow 1966 • National Defense Education Act Title IV Fellow 1966-69 • Brookings Economic Policy Fellow 1970-1971 • Hoover Institution, National Fellow 1974-1975 • Fellow, Aspen Institute for Humanistic Studies, and Chairman, Aspen Institute Task Force on the Future of the Postal Service 1978-79.

RECENT PROFESSIONAL ACTIVITIES

Panelist, Symposium on Democracy, Diversity, and News Media Ownership, Stanford University, January 1990 • Panelist, Conference on the Reagan Revolution, University of Virginia Law School, April 1990 • Panelist, ABA Section of Antitrust Law Cable Television Symposium, June 1990 • Board of Editors, *Journal of Media Economics*, 1990-• Referee, *Scandinavian Journal of Economics*, 1990 • Chairman, Panel on Technological Change in Practice, 18th Annual Telecommunications Policy Research Conference, October 1990 • Discussant, Conference on Policy Approaches to the Deregulation of Network Industries, American Enterprise Institute, October 1990 • U.S. Advisory Team on Competition Law, Government of Jamaica, 1990-91 • Demonstration Expert Witness, DOJ Merger Training Program, December 1990 • Member, Economics and Finance Delegation to the Soviet Union, Citizen Ambassador Program, June 1991 • Organizer, Panel on the Future of the Broadcast Networks, 19th Annual Telecommunications Policy Research Conference, September 1991 • Faculty, ABA Antitrust Section, The Cutting Edge of Antitrust: Market Power, October 1991 • Referee, *Quarterly Rev. of Econ. & Bus.*, 1992 • Referee, *Journal of Industrial Econ.*, 1992 Leader, International Advisory Team on Competition Policy and Consumer Protection, Government of Argentina, 1992 • Referee, *Journal of Policy Analysis and Mangement*, 1992 • Organizer, World Bank Seminar on Competition Policy in Latin America, 1993 Advisor, World Bank Philippenes Private Sector Assessment, 1993 • Referee, National Research Council, 1993 • Speaker, World Bank/INDECOPI Conference on Competition Policy, Lima, Peru, 1994.

PUBLICATIONS

BOOKS

B. M. Owen, J. Beebe, and W. G. Manning, Jr., Television Economics, D.C. Heath, 1974.

B. M. Owen, Economics and Freedom of Expression: Media Structure and the First Amendment, Ballinger, 1975.

B. M. Owen and R. Braeutigam, The Regulation Game: Strategic Use of the Administrative Process, Ballinger, 1978.

R. Noll and B. M. Owen, The Political Economy of Deregulation, American Enterprise Institute, 1983.

B. M. Owen and S. Wildman, Video Economics, Harvard University Press, 1992.

M. W. Frankena and B. M. Owen, Electric Utility Mergers: Principles of Antitrust Analysis, Praeger, 1994.

CHAPTERS OR SECTIONS OF BOOKS

B. M. Owen, "The Role of Analysis in the Formation of Cable Television Policy," in R. E. Park (ed.) The Role of Analysis in Regulatory Decisionmaking: The Case of Cable Television, Lexington Books, 1973.

B. M. Owen, "Diversity and Television," OTP Staff Research Paper, 1972, reprinted in D. H. Ginsburg, Regulation of Broadcasting, West, 1979.

J. H. Beebe and B. M. Owen, "Alternative Structures for Television," OTP Staff Research Paper, 1972, reprinted in D. H. Ginsburg, Regulation of Broadcasting, West, 1979.

B. M. Owen, "The Place of Print in an Electronic Society," in G. O. Robinson, ed., Communications for Tomorrow: Policy Perspectives for the Future, Praeger, 1978.

S. M. Besen, B. M. Mitchell, R. G. Noll, B. M. Owen, R. E. Park, and J. N. Rosse, "Economic Policy Research on Cable Television: Assessing the Cost and BeneWts of Cable Deregulation," in P. A. MacAvoy, ed., Deregulation of Cable Television, American Enterprise Institute, 1977.

CHAPTERS OR SECTIONS OF BOOKS (CONTINUED)

B. M. Owen, "Cable Television: The Framework of Regulation," in Study on Federal Regulation, Appendix to Vol. XI, Framework for Regulation, Committee on Governmental Affairs, United States Senate, 95th Congress, 2nd Session, October 1978.

B. M. Owen, "The Rise and Fall of Cable Television Regulation," in L. Weiss, ed., The Regulatory Revolution, Little, Brown, 1981.

B. M. Owen, "Differing Media, Differing Treatment?" in D. Brenner and W. Rivers, eds., Free But Regulated: Conflicting Traditions in Media Law, 1982.

B. M. Owen and Robert D. Willig, "Economic and Postal Pricing Policy," in J. Fleishman, ed., The Future of the Postal Service, Praeger, 1983.

R. W. Crandall and B. M. Owen, "Some Economic Implications of the Divestiture of the Bell Operating Companies," in H. Shooshan, ed., Disconnecting Bell, Pergamon Press, 1984.

S. S. Wildman and B. M. Owen, "Program Competition in the New Video Industry," in E. Noam, ed., Rivalry Among the Video Transmission Media, Columbia Univ. Press, 1985.

B. M. Owen, "Interest Group Behavior and the Political Economy of Regulation," in J. Meyers, ed., Incentives vs. Controls in Health Policy: Broadening the Debate, AEI, 1985.

B. M. Owen, contributor, The Use of Economists in Antitrust Litigation, J. GreenWeld, ed., ABA Section of Antitrust Law, 1984.

B. M. Owen and P. Gottlieb, "The Rise and Fall and Rise of Cable Television Regulation," in L. Weiss, ed. Regulatory Reform: What Actually Happened, Little, Brown, 1986.

B. M. Owen, contributor, Horizontal Mergers: Law and Policy, ABA Section of Antitrust Law Monograph No. 12, 1986.

R. G. Noll and B. M. Owen, "United States v. AT&T: An Interim Assessment," in Hausman and Bradley, eds., Future Competition in Telecommunications, Harvard Business School Press, 1988.

R. G. Noll and B. M. Owen, United States v. AT&T: The Economic Issues, in Kwoka and White, eds., The Antitrust Revolution, Scott Foresman, 1988; 2nd ed. 1994.

B. M. Owen, "Defining Geographic Markets under the 1984 Merger Guidelines: An Economic Perspective (Outline)," in Practising Law Institute, 27th Annual Advanced Antitrust Seminar, Course Handbook Series No. 581, PLI, 1987.

ARTICLES

B. M. Owen, "Public Policy and Emerging Technology in the Media," 18 Public Policy 539, Summer 1970.

B. M. Owen, "Monopoly Pricing in Combined Gas and Electric Utilities," 15 Antitrust Bulletin 713, Winter 1970.

B. M. Owen, "Newspaper and Television Station Joint Ownership," 18 Antitrust Bulletin 787, Winter 1973.

ARTICLES (CONTINUED)

B. M. Owen, "Diversity in Broadcasting: The Economic View of Programming," 28 Journal of Communication 43, Spring 1978.

B. M. Owen, "Structural Approaches to the Problem of TV Network Economic Dominance," 1979 Duke Law Journal 191, 1979.

B. M. Owen, "Regulating Diversity: The Case of Radio Formats," 21 Journal of Broadcasting 305, Summer 1977.

M. Spence and B. M. Owen, "Television Programming, Monopolistic Competition and Welfare," 91 Quarterly Journal of Economics 103, February 1977.

W. Manning and B. M. Owen, "Television Rivalry and Network Power," 24 Public Policy 33, Winter 1976.

B. M. Owen and J. Grundfest, "Kickbacks, Specialization, Price Fixing, and Efficiency in Residential Real Estate Markets," 29 Stanford Law Review 931, May 1977.

R. Braeutigam, B. M. Owen and J. Panzar, "An Economic Analysis of Alternative Fee Shifting Systems" 47 Law and Contemporary Problems 801, 1984.

B. M. Owen and P. R. Greenhalgh, "Competitive Policy Considerations in Cable Television Franchising" 4 Contemporary Policy Issues 69, April 1986. (Working paper version appears in Options for Cable Legislation, Hearings before the Subcommittee on Telecommunications, Committee on Energy and Commerce, U.S. House of Representatives, Serial No. 98-73, 1983).

B. M. Owen, "The Evolution of Clayton §7 Enforcement and the Beginnings of U.S. Industrial Policy" 31 Antitrust Bulletin 409, Summer 1986.

B. M. Owen, "Determining Optimal Access to Regulated Essential Facilities," 58 Antitrust Law Journal 887 (1989).

NOTES AND REVIEWS

B. M. Owen, "Comment on the Perfectly Competitive Allocation of Public Goods," Review of Econ. and Statistics, November 1969.

B. M. Owen, "Discussion" prepared for the Session on the Economics of the First Amendment, annual meetings of the American Economic Association, New York, December 1973, 64 American Economic Review 400, May 1974.

R. G. Noll and B. M. Owen, "What Makes Reform Happen?" Regulation, March/April 1983.

NOTES AND REVIEWS (CONTINUED)

B. M. Owen, Book Review of F. Fisher, et al., Folded, Spindled, and Mutilated: Economic Analysis of U.S. v. IBM, Sloan Management Review, Winter 1984.

B. M. Owen, "Cynicism and Credulity in Explaining Regulation," in The Political Economy of Regulation: Private Interests in the Regulatory Process, FTC Law and Economics Conf., March 1984.

B. M. Owen, "Recent Developments in Cable Television Regulation," 1 Regulatory Reform: The ABA Section of Antitrust Law Industry Regulation Committee Newsletter, December 1985.

B. M. Owen, Book Review of A. Brown, Commercial Media in Australia: Economics, Ownership, Technology and Regulation, 17 Economic Analysis and Policy (**n.s.**) 105, March 1987.

B. M. Owen, "The Electronic Media," in Proceedings of the 1990 Stanford Symposium on Democracy, Diversity, and News Media Ownership (forthcoming).

B. M. Owen, Book Review of P. Temin, The Fall of The Bell System, 1988 Regulation: AEI Journal on Government and Society 2.

M. W. Frankena and B. M. Owen, "Competitive Issues in Electric Utility Mergers," International Merger Law, No. 26, October 1992.

B. M. Owen, "Merger Control in Argentina," International Merger Law, No. 27, November 1992.

M. W. Frankena and B. M. Owen, "Antitrust Analysis of Electric Utility Mergers After the Energy Policy Act," International Merger Law, No. 30, February 1993.

M. W. Frankena and B. M. Owen, "Flawed Reasoning," *Public Utilities Fortnightly,* July 15, 1993.

CONFERENCE PROCEEDINGS

B. M. Owen, Editor, Papers and Proceedings, 1972 Conference On Telecommunications Policy Research, Office of Telecommunications Policy, 1972.

B. M. Owen, Editor, Report of Papers and Proceedings, 1975 Conference on Telecommunications Policy Research, Aspen Institute for Humanistic Studies Program on Communications and Society, 1975.

POPULAR ARTICLES

B. M. Owen and J. Grundfest, "A Most Expensive 'Real-Estate Custom,' " Los Angeles Times, December 4, 1977.

B. M. Owen and R. G. Noll, "How Roles Grew in a TV Rule-Making Drama" Wall Street Journal, October 19, 1983.

B. M. Owen, "Give AT&T the Freedom It Didn't Want," Wall Street Journal, December 6, 1984.

B. M. Owen, "Cable Competition at Sufferance of Cities," Wall Street Journal, May 9, 1985.

B. M. Owen, "Economists as Trustbusters?" Wall Street Journal, January 22, 1987.

RESEARCH REPORTS

B. M. Owen (with others) Analysis of the Causes and Effects of Increases in Same-Year Rerun Programming and Related Issues in Prime Time Network Television, Office of Telecommunications Policy, Executive Office of the President, 1973.

B. M. Owen and J. Grundfest, Licensing of Real Estate Brokers as Underwritten Title Insurance Agents, Report to the State of California, Studies in Industry Economics #64, Stanford Univ., 1976.

D. A. Dunn and B. M. Owen, Policy Options in Mobile Radio Spectrum Management, prepared under contract with the UHF Task Force of the FCC, Stanford University, 1978.

B. M. Owen, Five Propositions on the Social Effects of Television, prepared for the Sloan Foundation, Duke University, 1979.

B. M. Owen, P. R. Greenhalgh and W. C. Myslinski, Notes on the Merger Guidelines: Economic Perspectives, Economists Incorporated Research Report, 1982.

K. C. Baseman and B. M. Owen, A Framework for Economic Analysis of Electronic Media Concentration Issues. Economists Incorporated Research Report, 1982.

R. W. Crandall, R. G. Noll, and B. M. Owen, Economic Effects of the Financial Interest and Syndication Rule. Economists Incorporated Research Report, 1983.

B. M. Owen, M. Spence and P. R. Greenhalgh, Federal Antitrust Policy and the Incentive to Undertake Research and Development in the Information Technologies, prepared for the OYce of Technology Assessment, U.S. Congress. Economists Incorporated Research Report, 1983.

R. W. Crandall, B. M. Owen, and R. S. Skitol, Competition Policy in Jamaica, Report of the Advisory Team to the Government of Jamaica, January 1991.

B. M. Owen, et al., An Economic Analysis of the Effect of the Exxon Valdez Oil Spill on Alaskan Seafood Prices, Report to the Trans-Alaska Pipeline Liability Fund, December 1991.

B. M. Owen, et al., Competition Policy and Consumer Protection in Argentina, Report of the Advisory Team to the Government of Argentina, July 1992.

B. M. Owen, et al., Cable Rate Regulation—A Multi-Stage Benchmark Approach, January 1993.

WORKING PAPERS

B. M. Owen, "Externalities, Public Goods and Economic Growth," Center for Res. in Economic Growth #84, Stanford Univ., 1969.

J. N. Rosse, B. M. Owen and D. L. Grey, "Economic Issues in the Joint Ownership of Newspaper and Television Media," Center for Research in Economic Growth #97, Stanford University, 1970.

B. M. Owen, "The Price Effects of Mergers," (dissertation) Center for Research in Economic Growth #96, Stanford University, 1970.

B. M. Owen, D. L. Grey, and J. N. Rosse, "A Selected Bibliography in the Economics of the Mass Media," Center for Research in Economic Growth #99, Stanford University, 1970.

S. A. Lasher and B. M. Owen, "International Facilities Study," Office of Telecommunications Policy, Executive Office of the President, Staff Res. Paper, 1971. [NTIS accession no. PB 208 670.]

B. M. Owen, "The Regulation of Commercial Radio Stations," Office of Telecommunications Policy, Executive Office of the President, Staff Res. Paper, 1971. [NTIS accession no. PB 208 462.]

B. M. Owen, "Spectrum Allocation: A Survey of Alternative Methodologies," Office of Telecommunications Policy, Executive Office of the President, Staff Res. Paper, 1972. [NTIS accession no. PB 208 666.]

B. M. Owen, "Specialized Carriers: A Conceptual Approach to Rates and Entry," Office of Telecommunications Policy, Executive Office of the President, Staff Res. Paper, 1972. [NTIS accession no. PB 211 652.]

B. M. Owen, "Measuring Violence on Television: The Gerbner Index," Office of Telecommunications Policy, Executive Office of the President, Staff Research Paper, 1972. [NTIS accession number PB 210 827.]

R. Braeutigam, B. M. Owen and T. Ulen, "Rate Structure and Open Entry: The Problem of Regulating Competition," Center for Research in Economic Growth #166, Stanford University, 1974.

J. N. Rosse, B. M. Owen, and J. Dertouzos, "Trends in the Daily Newspaper Industry 1923-1973," Studies in Industry Economics #57, Stanford University, 1975.

B. M. Owen, C. Dunham and O. Phillips, "Toward An Economic Theory of the Administrative Agency," Studies in Industry Economics #78, Stanford University, 1977.

B. Mickle and B. M. Owen, "Vertical Integration: Review and Applications," Studies in Industry Economics #73, Stanford University, 1977.